U.S. AIR FORCE

BANGLADESH AIR FORCE

AORTIC INSUFFICIENCY IN A USAF PILOT CANDIDATE

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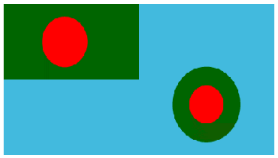
Overview

- History of present illness
- Past medical history
- Family history
- Social history
- Physical examination
- Clinical evaluation
- Pathophysiology of Aortic Insufficiency (AI)
- Aeromedical considerations
- USAFSAM ACS recommendations
- Summary



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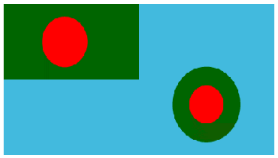
History of Present Illness

- 29 y/o 2nd Lt being evaluated under the Medical Flight Screening (MFS) program
- Routine echocardiogram revealed a tri-leaflet aortic valve with mild AI
- No history of heart murmur
- Currently asymptomatic with no physical limitations
- No history of chest pain, palpitations, syncope, near syncope or congestive heart failure symptoms



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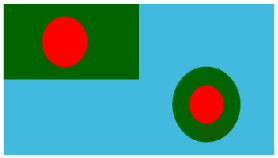
Past Medical History

- Scarlet fever- age 7
- Chicken pox – age 8/9
- No history of rheumatic fever, hypertension, syphilitic aortitis or any connective tissue disorder
- No allergies
- No medication or supplements
- IPPD – Nov 02 negative



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Family History

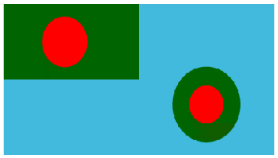
- Father: 63 alive, hypertensive
- Mother: 58 alive and well
- Siblings: alive and well
- Grandparents: no evidence of cardiac disease

Social History

- **Smoker: 8 pack-years, quit 4 years ago**
- **Caffeine: coffee 1 cup/day**
- **Good physical condition, runs 2 miles 4 times per week, strength training 4 times per week**
- **Diet: unrestricted**

Physical Examination

- Vital signs
  - BP: 139/94 mm Hg (AM) & 120/80 mm Hg (PM)
  - Average: 124/83 mm Hg (average for 3 days)
  - Pulse: 66/min, regular
- Peripheral pulses: normal
- JVP: within normal limits, no dependent edema
- Heart: regular rhythm with no S3 or S4
  - No rubs/murmur
  - No positional changes
- Lungs: clear to auscultation



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Clinical Evaluation

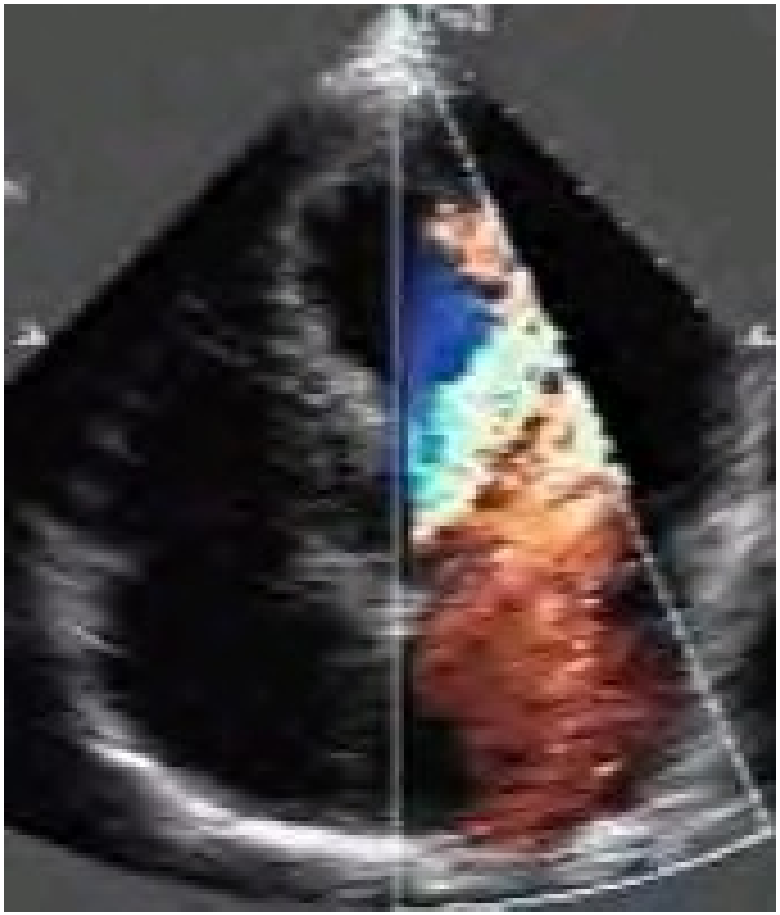
- **Treadmill**
  - **Maximal treadmill test with normal ST segment response**
- **Resting ECG**
  - **Within normal limits**
- **Holter**
  - **Normal**
  - **No symptoms reported**
- **Echocardiogram**
  - **Normal function**
  - **Tri-leaflet aortic valve with mild AI**
  - **Mid-wall fractional shortening (MFS)**

Other Studies

- **Lipid profile: normal**
- **Radiographic studies including chest, KUB & fluoroscopy: normal**

Pathophysiology of AI

- AI develops from the incompetence of aortic valves originating from multiple etiologies
- Clinical presentation depends upon the decompression of over-loading the left ventricle resulting in hypertrophy and dilatation of the cavity. The ultimate result is progression to retrograde cardiac failure



Aeromedical Considerations

- AI is disqualifying for Flying Class I: AFM 48-132 para A 7.17.1.6
- However, is waiverable
- ACS considers trace AI without the murmur of AI, and in the presence of a normal three leaflet valve, as a normal variant
- Mild AI in the presence of a normal valve may be considered for FC I/IA and FC II/IIC waivers
- Severe AI is permanently disqualifying

Aeromedical Considerations

- Civilian data, derived from 7 published series involving 490 patients with a mean follow-up period of 6.4 years, were reviewed
- Rate of progression to symptoms and/or LV systolic dysfunction averaged 4.3% per year
- Annual rate of sudden cardiac death was <0.2% per year

Aeromedical Considerations

- **Based on available current data**
  - **ACS recommends annual evaluation to establish stability of his disease process if placed in high performance airframes**
  - **Following two normal initial evaluations, re-evaluations can be extended to every 3 years**
  - **Chance of sudden incapacitating cardiac event is expected to be low and FC I waiver in accordance with current policy can be considered**

ACS Recommendations

- FCI waiver for tri-leaflet valve with AI
- SBE prophylaxis
- Echocardiogram at 1 year to check for progression

Summary

- **Patient with a tri-leaflet aortic valve and mild AI on routine echocardiography**
- **Current data evaluation supports consideration for FC I waiver**

Questions?